

Remarks

The above Amendments and these Remarks are in reply to the non-final Office Action mailed July 13, 2007.

Applicant gratefully acknowledges the courtesy of an interview with Examiner Hadi Akhavannik on August 22, 2007, during the course of which interview the participants discussed various amendments to Claim 1 to address the rejection under 35 U.S.C. 102(b), the substance of which amendments are included fully herein.

I. Summary of Examiner's Objections and Rejections

Prior to the Office Action mailed on July 13, 2007, Claims 1-21 were pending in the Application. In the Office Action, Claim 21 was rejected under 35 U.S.C. §101 for being directed to non-statutory subject matter. Claims 1-2 and 12-21 were rejected under 35 U.S.C. §102(b) as being anticipated by Crinon (US 6,331,859) (hereinafter referred to as "Crinon"). Claims 3-11 were rejected under 35 U.S.C. §103 as being unpatentable over Crinon in view of Hansen et al. (20020038456) (hereinafter referred to as "Hansen").

II. Summary of Applicant's Amendments

The present Reply cancels Claim 13; amends Claims 1, 17 and 21; all as shown above. Applicant respectfully reserves the right to prosecute any originally presented or canceled claims in a continuing or future application.

III. Claim Rejections under 35 U.S.C. § 101

Claim 21 was rejected under 35 U.S.C. §101 for being directed to non-statutory subject matter. Claim 21 has been amended consistent with the examiner's suggestions as set forth above and reconsideration is respectfully requested.

IV. Claim Rejections under 35 U.S.C. §102(b)

Claims 1-2 and 12-21 were rejected under 35 U.S.C. §102(b) as being anticipated by Crinon.

Claim 1

Claim 1 has been amended by the current Reply to more clearly define the embodiment

therein. As amended, Claim 1 defines:

1. A method for discriminatively selecting keyframes representative of segments of a source digital media, comprising the steps of:
 - obtaining said source digital media for which keyframes are to be selected, wherein said digital information contains a plurality of segments;
 - pre-processing said digital information to obtain a plurality of feature vectors; and
 - discriminatively selecting a keyframe for each segment, wherein each selected keyframe is both representative of the segment the selected keyframe originates from and distinguishable from other selected keyframes which are representative of the remaining plurality of segments.

Claim 1, as currently amended, defines a method for discriminatively selecting keyframes representative of segments of a source digital media. This method includes obtaining the source digital media for which the keyframes are to be selected, the source digital media containing a plurality of segments; pre-processing the information to obtain a feature vectors; and discriminatively selecting a keyframe for each segment, wherein each selected segment is both representative of the segment it originates from and distinguishable from the other keyframes which represent other segments within the source digital media. Accordingly, the method selects keyframes which are both maximally similar to the local set of frames and maximally dissimilar from the other selected keyframes.

Crinon relates to a system for summarizing digital video sequences as a series of representative key frames. Crinon provides a method and apparatus for digital video content analysis and extraction based on analysis of "feature vectors" corresponding to the frames of a video sequence. Feature vectors are vector signals that can be used to convey information about the content of a frame of digital video. For example, they can be: used to represent the average intensity of an image; a luminance, chrominance, or combined luminance and chrominance sample value histogram; etc. Crinon, Col. 4, Ins. 45-65. A "vector median filter" is then used to determine the relative cumulative distances from each feature vector in a set to the other feature vectors in the set. The cumulative distance from a feature vector to all other feature vectors in the set measures the "distortion" of the set of vectors. The distortion indicates the homogeneity of the content of a frame of video, characterized by the corresponding feature vector, with the content of all other frames of video in the set. Crinon, Col 5, Ins. 1-9. The vector rank filter thus permits identification of the vector producing the least distortion among the set of vectors corresponding to the video segment. This vector producing the least distortion will correspond to the frame, belonging to the set of frames, which is most representative of the content of the frames in the segment. Crinon,

Col. 7, Ins. 24-30. The invention in Crinon also facilitates determining when the content of a *next frame in a series* differs substantially from *the proceeding frames in the series* or ranking the frames of a set according to the relative homogeneity of content of the frames or distortion of the set by each frame. Crinon, Col 5, Ins. 13-18. This is another factor used by Crinon to determine which frame is the most representative of the content of the frames in the segment.

Applicant's invention embodied in Claim 1 is not anticipated by Crinon, among other things, for the following reasons. As discussed during the interview with Examiner Hadi Akhavannik on August 22, 2007, the focus of Crinon appears to be limited to evaluating the frames within a single segment to determine which frame should be selected as the keyframe for that particular segment. Once this determination is made, the next segment is independently analyzed to determine the ideal keyframe for that next segment. Thus, the Crinon selection process is entirely "local" as it only compares frames within a single segment in selecting a keyframe. Put another way, the frames present in and/or the keyframes selected from a first segment will not influence or be considered when selecting a keyframe for a second segment using the Crinon system.

On the other hand, Applicant's invention set forth in Claim 1 discriminatively selects a keyframe for each segment, wherein each selected keyframe is both representative of the segment the keyframe originates from *and distinguishable from other selected keyframes which are representative of the remaining plurality of segments*. Accordingly, Applicant's invention includes a novel method of selecting keyframes based on both "local" considerations (keyframes are selected, in part, based on how representative they are of a segment) and "global" considerations (keyframes are selected, in part, based on how distinguishable the keyframes are from the other frames, hence the other keyframes, from the other remaining segments). (For support, please refer to Application as published, US 2005/0074168, ¶¶ 0004, 0050 and 0056). In fact, the practical differences in the keyframes ultimately selected by using Applicant's keyframe selection process as opposed to using the Crinon keyframe selection process are generally illustrated in Fig. 6A and discussed in ¶ 82 of the Application as published. Since Crinon fails to disclose and/or envision the use of "global" considerations in selecting its keyframes, Crinon fails to anticipate Claim 1 of Applicant's invention.

In view of the comments provided above, Applicant respectfully submits that the embodiment defined by Claim 1 is neither anticipated by, nor obvious in view of the cited reference, and reconsideration thereof is respectfully requested.

Claims 17 and 21

Independent Claims 17 and 21 have been amended similar to Claim 1 to more clearly define the embodiment therein and the comments provided for Claim 1 above are incorporated by reference herein. As set forth above, Applicant's invention includes a novel method of selecting keyframes based on both "local" considerations (keyframes are selected, in part, based on how representative they are of a segment) and "global" considerations (keyframes are selected, in part, based on how distinguishable the keyframes are from the other frames, hence the other keyframes, from the other remaining segments). (For support, please refer to Application as published, US 2005/0074168, ¶¶ 0004, 0050 and 0056). Crinon does not appear to disclose any such method.

Accordingly, Applicant respectfully submits that Claims 17 and 21, as amended, are likewise not anticipated by, nor obvious in view of the cited references, and reconsideration thereof is respectfully requested.

Claims 2, 12, 14-16 and 18-20

Claims 2, 12, 14-16 and 18-20 are not addressed separately but it is respectfully submitted that these claims are allowable as depending from allowable independent claims and further in view of the amendments to the independent claims, and the comments provided above. Applicant respectfully submits that these Claims are similarly neither anticipated by, nor obvious in view of the cited references, and reconsideration thereof is respectfully requested. It is also submitted that these claims also add their own limitations which render them patentable in their own right. Applicant respectfully reserves the right to argue these limitations should it become necessary in the future.

V. Claim Rejection under 35 U.S.C. §103(a)

Claims 3-11 were rejected under 35 U.S.C. §103 as being unpatentable over Crinon in view of Hansen. It is respectfully submitted that Claims 3-11 are allowable as depending from allowable independent claims and further in view of the amendments and comments to Claim 1 provided above, which are hereby incorporated by reference. Applicant respectfully submits that these Claims are neither anticipated by, nor obvious in view of the cited references, and reconsideration thereof is respectfully requested. It is also submitted that this claim also adds its own limitations which renders it patentable in its own right. Applicant respectfully reserves the right to argue these limitations should it become necessary in the future.

VI. Conclusion

In view of the above amendments and remarks, it is respectfully submitted that all of the claims now pending in the subject patent applications should be allowable, and reconsideration thereof is respectfully requested. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of the patent.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this reply, including any fee for extension of time, which may be required.

Respectfully submitted,

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